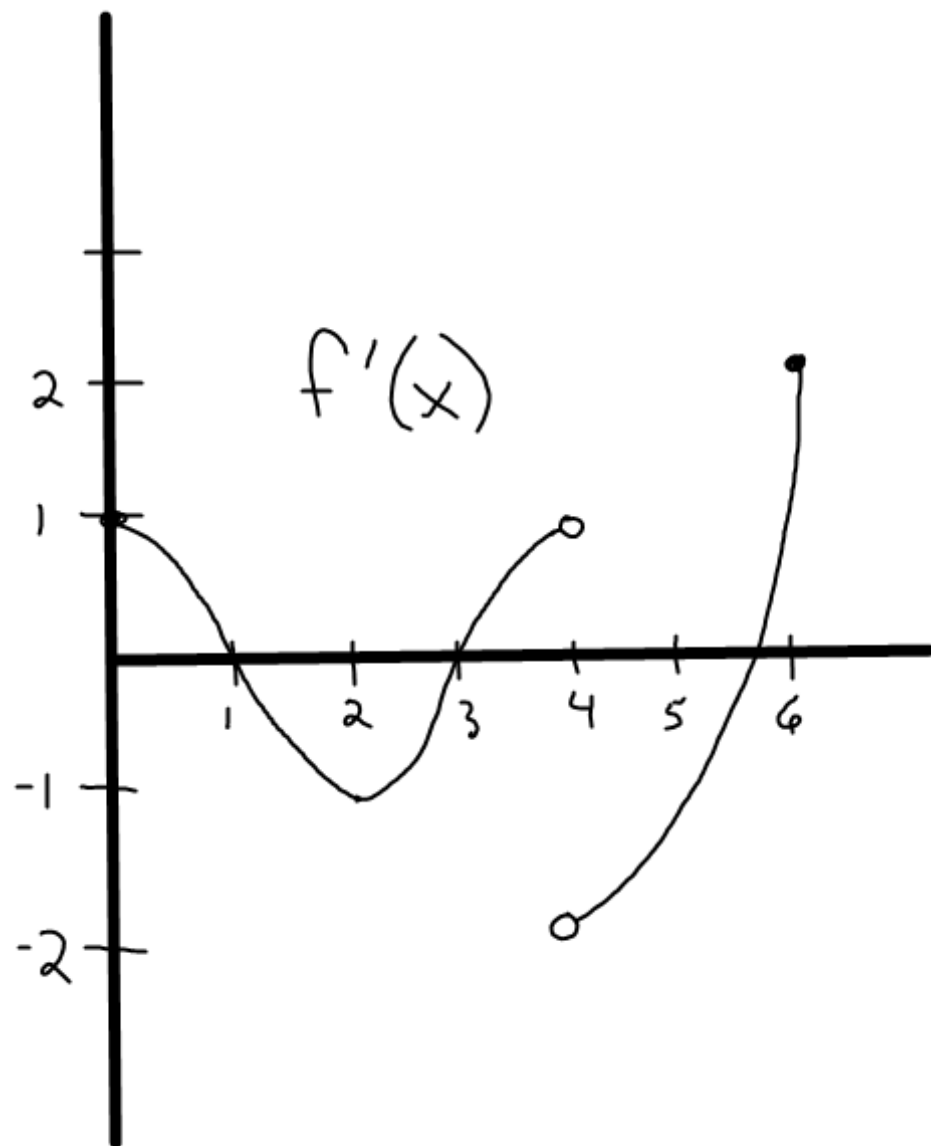


- (a) over what intervals is the function increasing? decreasing?
- (b) over what intervals is the function concave up? down?
- (c) where are the local max/min?
- (d) Find the x-coord. of the inflection points?
- (e) sketch $f(x)$

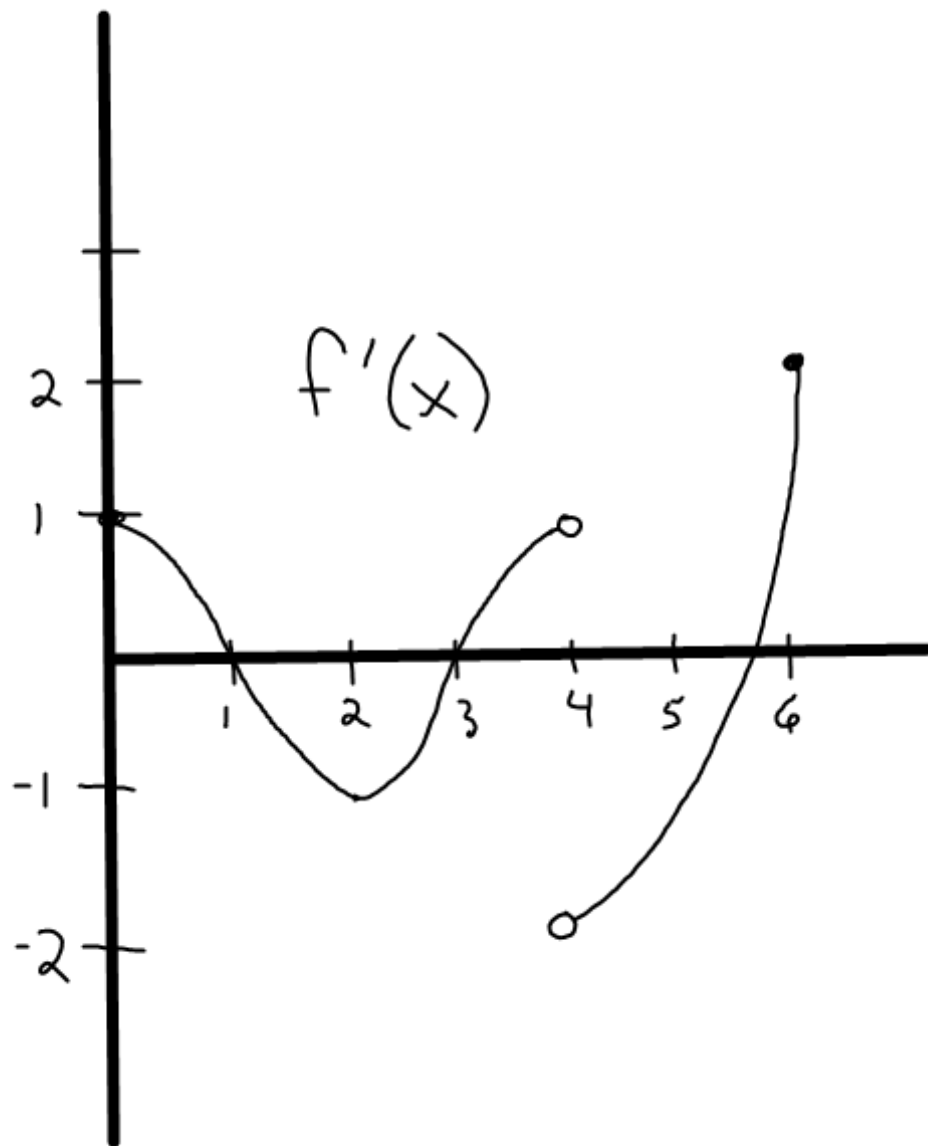


① Increasing:
 $(0, 1) \cup (3, 4) \cup (5.75, 6)$

Decreasing:
 $(1, 3) \cup (4, 5.75)$

② Concave Up: $(2, 4) \cup (4, 6)$

Concave Down:
 $(0, 2)$

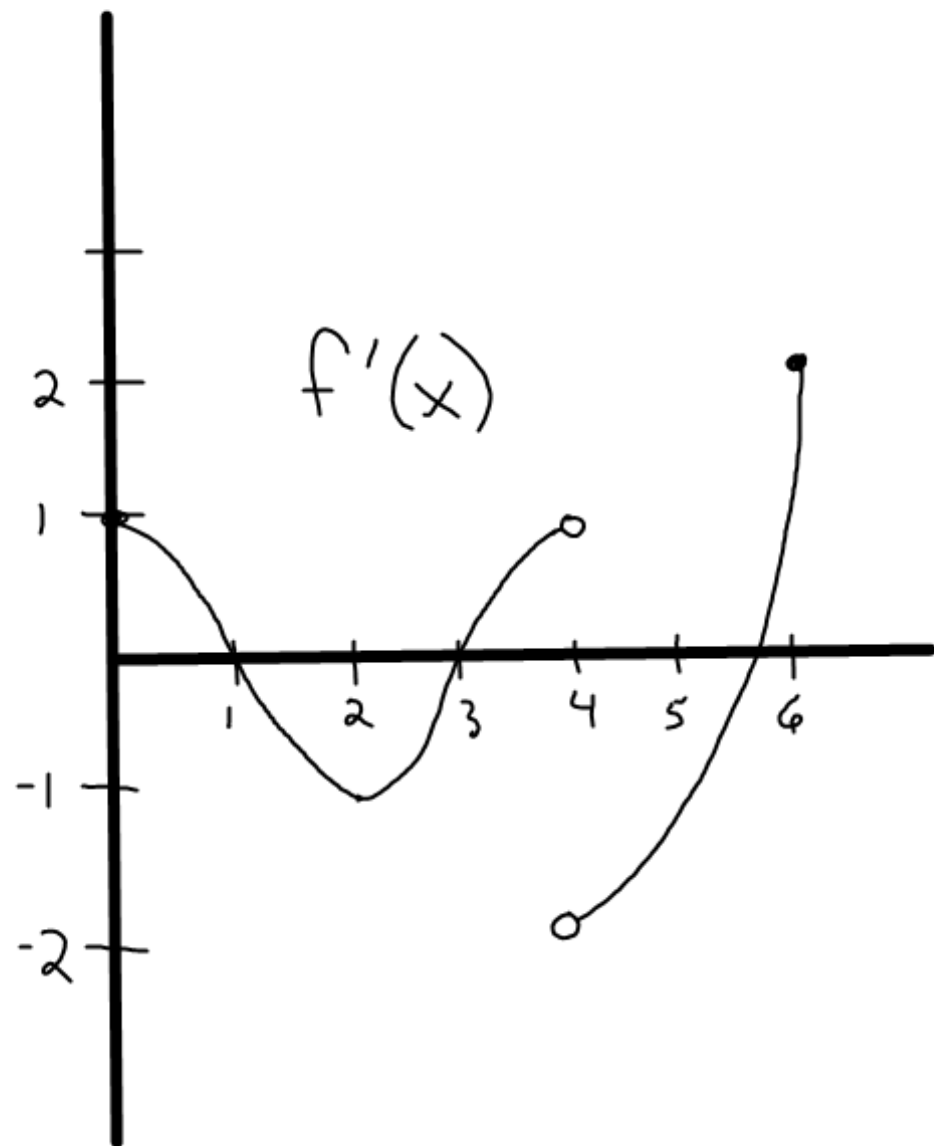
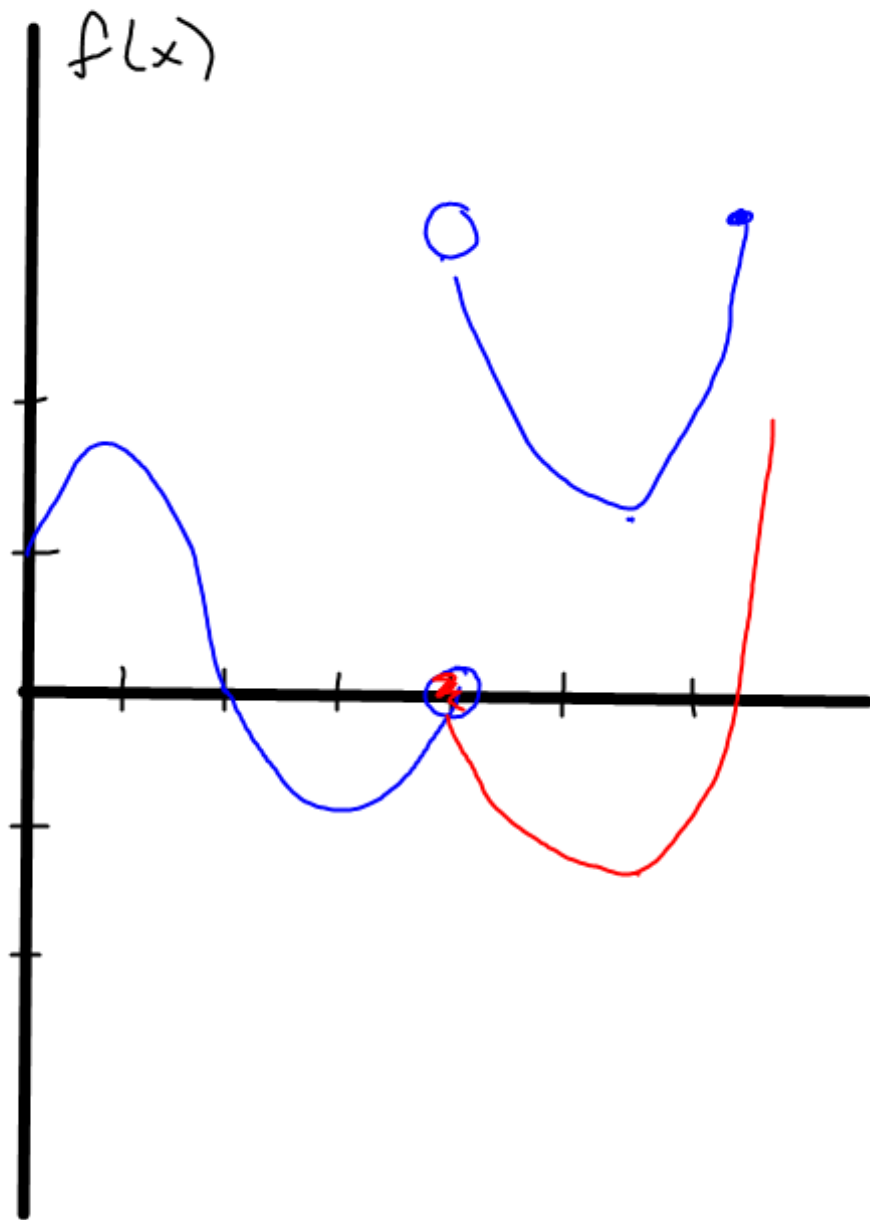


① Max: $f'(x)=0$ at 1
 $f'(x)=\text{undef.}$ at 4

min: $f'(x)=0$ at 3, 5.75
 max
 ↑ ↓ ↓ ↑ ↓ ↑ ↑ ↓
 3 5.75 4
 min min max

② inflection pts.

\wedge $x=2$



#36

$$y = 3x^5 - 25x^3 + 60x + 20$$

$$y' = \underline{15}x^4 - \underline{75}x^2 + \underline{60}$$

$$= 15(\underline{x^4 - 5x^2 + 4})$$

$$(x^2 - 4)(x^2 - 1)$$

↓

↓

$$(x-2)(x+2)(x-1)(x+1)$$

$$x^2 - 5x + 4$$

$$(x-4)(x-1)$$

40) $y' = (x-1)^2(x-2)(x-4)$ $0 = (x-1)^2(x-2)(x-4)$ $x = 1, 2, 4$ $(x-2)(x-4) = x^2 - 6x + 8$

$y'' = 2(x-1)(x^2 - 6x + 8) + (x-1)^2(2x-6)$ $\text{local max } x = 2$ $(x-1)(x-4) = x^2 - 5x + 4$

$0 = (2x-2)(x^2 - 6x + 8) + (x-1)^2(2x-6)$ $\text{local min } x = 4$

$0 = 2x^3 - 12x^2 + 16x - 2x^2 + 12x - 16 + (x^2 - 2x + 1)(2x - 6)$

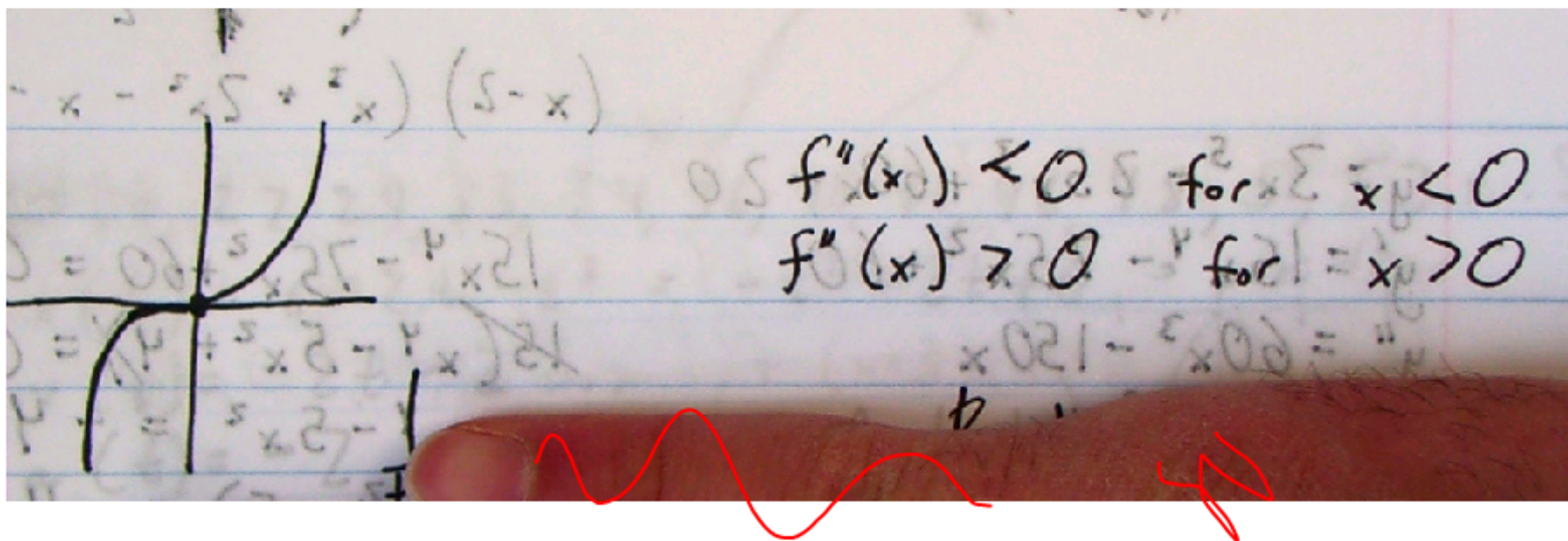
$0 = 2x^3 - 14x^2 + 28x - 16 + 2x^3 - 6x^2 - 4x^2 + 12x + 2x - 6$

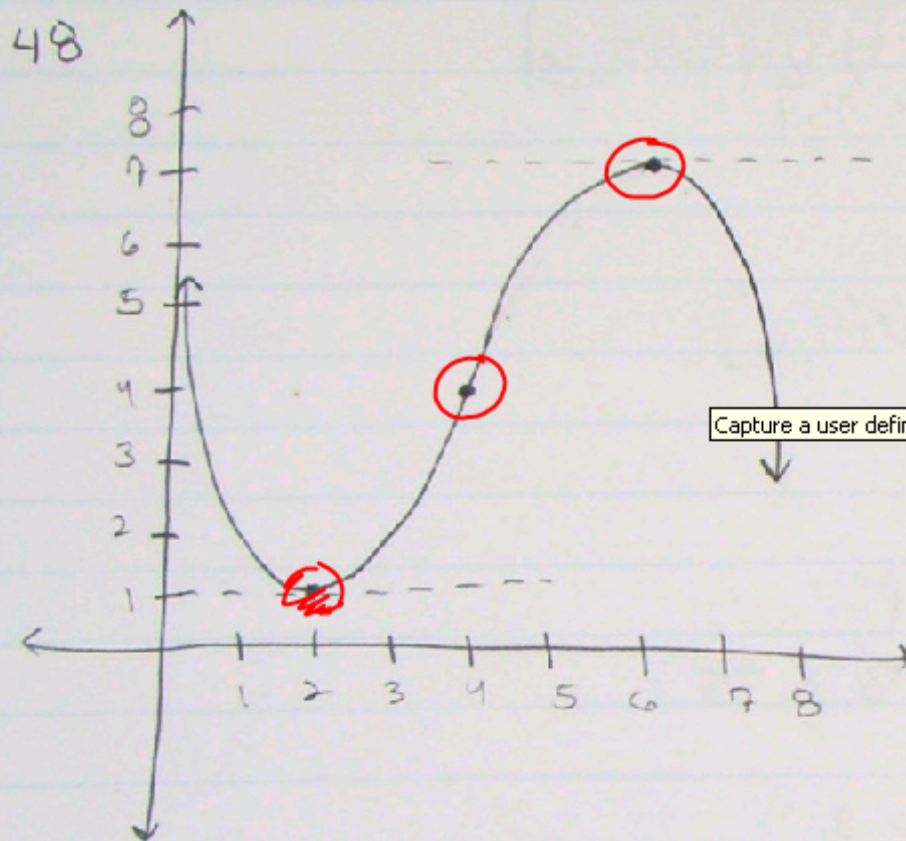
$0 = 4x^3 - 24x^2 + 42x - 22 = 2(2x^3 - 12x^2 + 21x - 11) = 2x^3 - 12x^2 + 21x - 11$

1	2	-12	21	-11
		2	-10	11
	2	-10	11	0

$x = 1.63, 3.37$ using Quadratic Formula

$\boxed{1.63, 3.37}$ pts of inflection



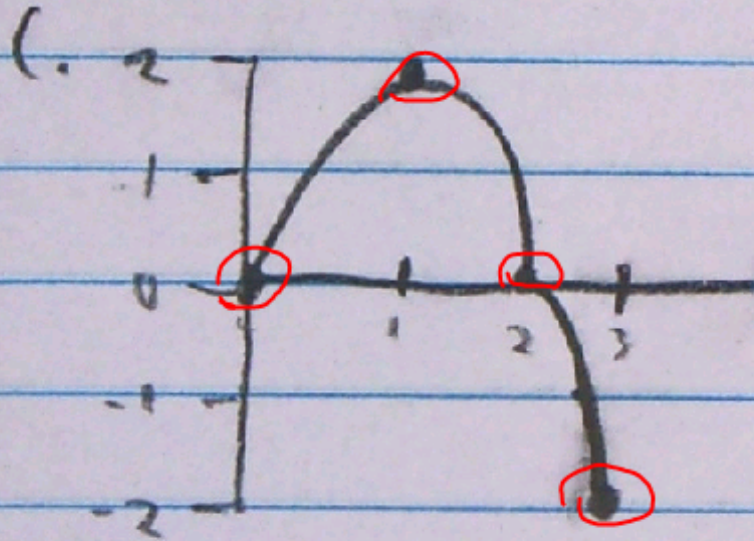


x	y	Curve
$x < 2$		falling, concave up
2	1	horizontal tangent
$2 < x < 4$		rising, concave up
4	4	inflection point
$4 < x < 6$		rising, concave down
6	7	horizontal tangent
$x > 6$		falling, concave down

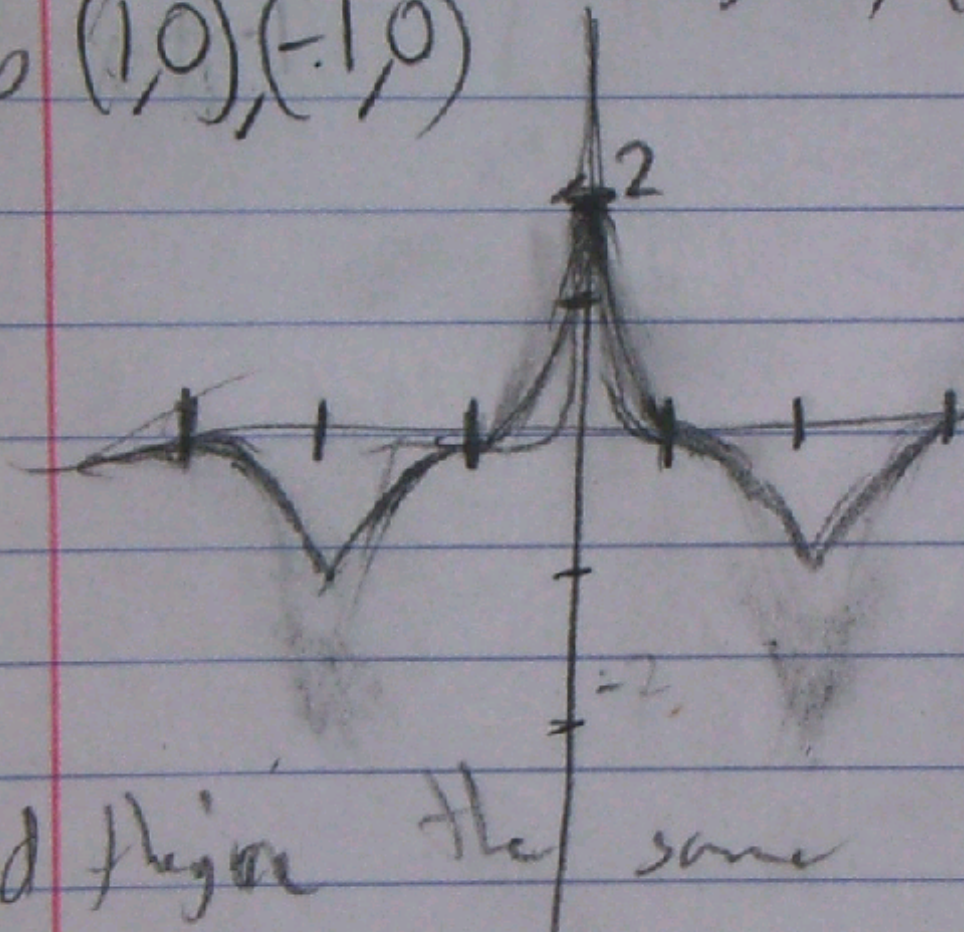
57. a. $x = 1$ absolute maximum

$x = 3$ absolute minimum

b. none



52a abs max $(0, 2)$,
 abs min $(2, -1), (-2, -1)$
 b $(1, 0), (-1, 0)$



d figure the same

Thur

4.4

Mon

4.4 + review

Wed

4.1-4.4

w/ limits
also

For Thur

sect. 4.4 # 3, 5, 6, 7, 9, 13, 14, 15, 17, 19


2 8